

RHYSODINE BEETLES (INSECTA: COLEOPTERA: CARABIDAE):  
NEW SPECIES, NEW DATA. IIROSS T. BELL<sup>1</sup>

Research Associate, Section of Invertebrate Zoology

JOYCE R. BELL<sup>1</sup>

## ABSTRACT

Seven new species of Rhysodini (Coleoptera: Carabidae) are described, *Kaveinga (Kaveinga) waai* (Moluccas), *Plesioglymmius (Juxtaglymmius) negara* (Malay Peninsula), *Omoglymmius (O.) emdomani* (New Guinea), *Rhyzodiastes (Temoana) riedeli* (New Guinea), *Rhyzodiastes (Temoana) mindoro* (Philippines), *Clinidium (Clinidium) onorei* (Ecuador), *Clinidium (C.) gilloglyi* (Panama). Descriptions are given for either males or females of the following five species, previously known from only one sex: *Omoglymmius (O.) pulvinatus* (Grouvelle), *Clinidium (C.) howdenorum* Bell and Bell, *Clinidium (C.) dormans* Bell and Bell, *Clinidium (C.) crater* Bell and Bell, *Clinidium (C.) spatulatum* Bell and Bell. An error in the description of *Clinidium (C.) boroquense* Bell is corrected. Range extensions or clarifications are given for the following 20 species: *Arrowina anguliceps* (Arrow), *Yamatosa niponensis* (Lewis), *Yamatosa draco* (Bell), *Yamatosa sinensis* Bell and Bell, *Plesioglymmius (Ameroglymmius) reichardti*, *Omoglymmius (Orthoglymmius) coomani* (Grouvelle), *Omoglymmius (O.) sakuraii* Nakane, *Omoglymmius (O.) semperi* Bell and Bell, *Omoglymmius (O.) hiekei* Bell and Bell, *Omoglymmius (O.) bucculatus* (Arrow), *Omoglymmius (O.) patens* Bell and Bell, *Omoglymmius (O.) pulvinatus* (Grouvelle), *Omoglymmius (O.) sedlaceki* Bell and Bell, *Rhyzodiastes (Temoana) convergens* Bell and Bell, *Clinidium (Arctoclinidium) rosenbergi* Bell, *Clinidium (C.) insigne* Grouvelle, *Clinidium (C.) oberthueri* Grouvelle, *Clinidium (C.) rossi* Bell, *Clinidium (C.) moldenkei* Bell and Bell, *Clinidium (C.) sulcigaster* Bell.

KEY WORDS: Rhysodini, Rhysodina, Clinidiina, Omoglymmiina, new species, distributions

## INTRODUCTION

Rhysodini is a taxon of about 350 beetles which live inside dead wood. They have been long interpreted as a separate family in Suborder Adephaga. It was recently demonstrated (Bell, 1998) that they are highly modified ground beetles (Carabidae) and belong in Subfamily Scaritinae. The sister group is Genus *Solenogenys* Westwood.

Adults are 4–10 mm long. All known species look red brown in bright light and piceous to black when seen in dimmer light. The general shape is like the smaller scaritine genera, especially *Clivina* Latreille but Rhysodini have many distinctive features, including a deep median pit communicating with an inner cavity in the head, moniliform antennae, and a condylelike neck. The pronotum has deep pits or longitudinal grooves. Males have calcars (anteriorly directed processes on middle and hind tibiae).

The mouthparts are highly unusual (Bell, 1994). The mentum covers the other mouthparts in ventral view and extends so far forward as to prevent any objects from coming between the mandibles. The leading edge of the mentum acts as a cutting edge as the insect thrusts itself forward between layers of wood fibers.

<sup>1</sup> Biology Department, University of Vermont, Burlington, Vermont 05405-0086. rtbell@zoo.uvm.edu  
Submitted 24 November 1997.

The mandibles serve only as covers for the other mouthparts. The galea and laciniae of the maxillae form two pairs of stylets. The palpi are completely retractile.

Rhysodine beetles are limited to moist forest areas where their food source is thought to be the amoeboid stages of slime molds (*Myxomycetes*). About a third of the species have vestigial wings. There is no evidence that the fully winged species can fly very far. Nevertheless, rhysodines, including flightless groups, have been very effective in colonizing islands.

This is a second paper in the pattern of Bell and Bell (1993), extending our revision of the Rhysodini of the world. It contains descriptions of seven new species, descriptions of sexes not previously described for five species, significant locality data for additional species, and changes in keys to accommodate the new species. An error in the description of *Clinidium boroquense* is rectified, while that of *Plesioglymmius (Juxttaglymmius)* is altered to accommodate a second species, and a modified key to the subgenera of *Plesioglymmius* is presented.

Abbreviations used in the text are: BMNH, Natural History Museum, London, United Kingdom; CAS, California Academy of Sciences, San Francisco, California; CMNH, Carnegie Museum of Natural History, Pittsburgh, Pennsylvania; CMNO, Canadian Museum of Nature, Ottawa, Ontario, Canada; CNCO, Canadian National Collection, Ottawa, Ontario, Canada; CUIC, Cornell University, Ithaca, New York; MNHB, Museum für Naturkunde der Humboldt-Universität zu Berlin, Germany; NMW, Naturhistorisches Museum Wien, Vienna, Austria; SMNS, Staatliches Museum für Naturkunde in Stuttgart, Germany; TAMU, Texas A & M University, College Station, Texas; UVM, University of Vermont, Burlington, Vermont. L/GW represents the ratio of pronotal length divided by its greatest width.

## SYSTEMATIC ENTOMOLOGY

### Subtribe Rhysodina

#### *Kaveinga (Kaveinga) waai*, new species

(Fig. 1A–C)

*Type Specimens*.—Holotype female, labelled “AMBON: Waai, Gg. Salahutu; 6.2: 300–600 m., Indonesia 1989; leg. Jäch” (NMW). “Ambon” refers to a political division, and not to the island. Waai is at 3°33’S, 128°18’E. Paratypes: two females, same data as holotype (NMW) (CMNH).

*Etymology*.—The specific epithet is derived from the name of the type locality.

*Diagnosis*.—This is the only species of *Kaveinga* sensu stricto which has several precoxal setae, and which has the outer pronotal carina much narrower than the inner one.

*Description*.—Length 6.7–7.0 mm. Antennal segment I pollinose above; segments II–V each with basal band of pollinosity; segments VII–XI with basal setae; segments VI–X with minor setae.

Head (Fig. 1A) as long as wide; clypeus broadly separated from median lobe by band of pollinosity; parafrenal bosses entirely pollinose; sides of median lobe deeply sinuate opposite temporal lobe; orbital groove dilated, as long as eye; temporal lobes slightly wider than long, their anteriomedial margins oblique, nearly straight, convergent posteriorly; medial angle rounded, scarcely overlapped by median lobe; two or three temporal setae, anteriormost seta at or in contact with orbital groove; pollinosity of postorbit well developed, with dorsal boundary opposite upper margin of eye; temporal lobe without overhang; no suborbital tubercle or gular ridge.

Pronotum (Fig. 1A) short; L/GW 1.05; widest near middle, sides curved, convergent to narrow apex; sides oblique, curved in posterior half, shallowly sinuate near posterior angle; latter obtuse; edge

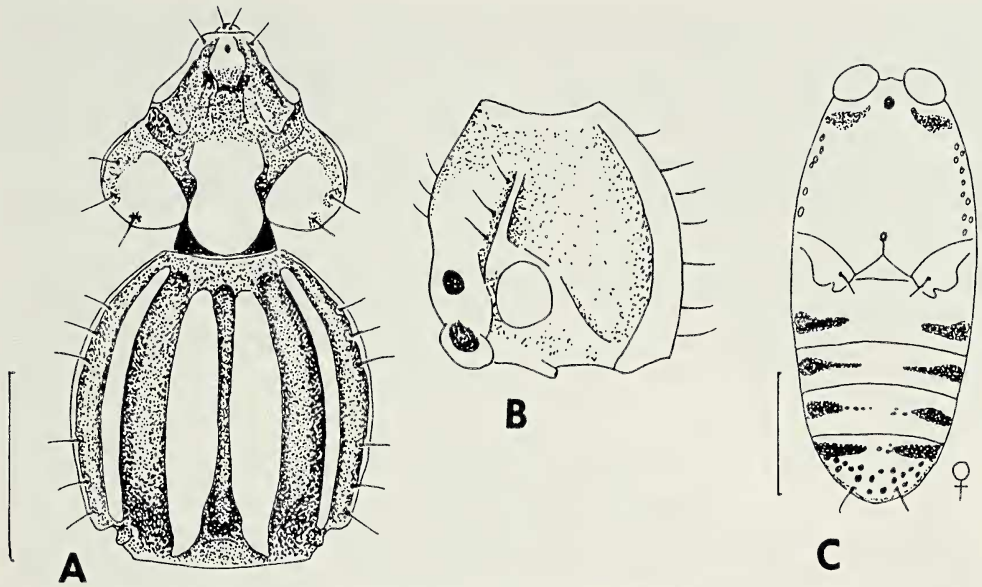


Fig. 1.—*Kaveinga* (sensu stricto) *waai*, n. sp. A. Head, pronotum, dorsal aspect. B. Prothorax, left ventrolateral aspect. C. Metasternum, abdomen, ventral aspect; female.

emarginate between hind angle and basal knob; latter rather prominent; paramedian grooves deep, pollinose; marginal grooves very broad; outer carina very narrow, about one-third of inner carina, much narrower than grooves on either side of it; anterior ends of inner carinae not abbreviated anteriorly by pollinosity; angular seta and about five marginals present; prosternum (Fig. 1B) with strong precoxal carinae, extended about 65% of distance to anterior margin; three to five precoxal setae; no transverse groove between carinae.

Elytra moderately broad; elytral intervals narrow, convex, outer ones subcarinate; stria punctures coarse; striae pollinose between punctures; posterior parts of outer striae deeply impressed; stria IV joined to III posteriorly; V and VI joined posteriorly; VII apparently joined to V + VI posteriorly; detached tip of VII marginal at apex of elytron; stria I with one seta at apex; stria II with one seta at apex, in some specimens also with one at base; stria IV with several (average seven) setae along its length, including one basal seta; detached apical part of stria VII with about seven setae. Abdominal sterna (Fig. 1C) III and IV with transverse grooves widely separated in middle; V with space between grooves occupied by a single line of punctures; VI with similar arrangement anteriorly, plus scattered, coarse punctures posteriorly; lateral pits in female not enlarged; front and middle femora partly pollinose; tibia of middle leg apparently minutely serrulate on lateral margin in profile view. Male unknown.

*Distribution.*—Known only from the type locality.

*Remarks.*—If a specimen were taken through our key to *Kaveinga* sensu stricto (Bell and Bell, 1979), it would trace to *K. abbreviata* (Lea), but the narrow outer carinae, the longer inner carinae, excavate marginal groove, and more numerous setae would easily separate it. The short pronotum and extensive pollinosity suggest that these two species are sister species. The key to *Kaveinga* sensu stricto (Bell and Bell, 1979:399) can be amended as follows:

- 3. remove *K. abbreviata*; substitute . . . . . 3.1'
- 3.1(3). Outer carina as wide as inner; marginal groove narrow; pronotum with no lateral, one angular seta; parafrontal boss shining, glabrous . . . . . *Kaveinga abbreviata* (Lea)
- 3.1'. Outer carina less than half as wide as inner; marginal groove very wide, with angular and about five marginal setae; parafrontal boss entirely pollinose . . . . . *Kaveinga waai*, n. sp.



The presence of many pronotal and temporal setae would make this species trace to subgenus *Vakeinga* Bell and Bell. The presence of serrulations on the middle tibia, the absence of enlarged pits on the abdomen of the female, both diagnostic of *Kaveinga* sensu stricto, as well as the characters linking *K. waai* with *K. abbreviata*, suggest that the new species really belongs to the latter subgenus. A modified key to the subgenera of *Kaveinga* is therefore in order.

In the key to subgenera (Bell and Bell, 1979:390), substitute the following for couplet 3:

- 3(2'). Middle tibia not apparently serrulate in profile view of lateral surface; female with enlarged lateral pits on abdominal segments III and IV; prothorax without precoxal setae, but with postcoxal setae . . . . . *Vakeinga*  
 3'. Middle tibia apparently serrulate in profile view of lateral surface; female without enlarged lateral pits on abdomen; prosternum with or without precoxal setae, but without postcoxal setae . . . . . *Kaveinga* sensu stricto

### Subtribe Omoglymmiina

#### *Yamatosa niponensis* (Lewis, 1888)

*Additional Locality*.—TAIWAN: Taichung, Pilushi, 2200-m series of 16 specimens, coll. Davidson, Young, Rawlins. May 22–23, 1988. (A second locality from Taiwan.) (CMNH).

#### *Yamatosa draco* (Bell, 1977)

*Additional Locality*.—CHINA: Sichuan, Gongga Shan, Hailuogou above camp 3, 3050–3200 m., 7-VII-1996. J. Farkac, B. Kabátek, A. Smetana. 29°35'N, 102°00'E. (A. Smetana personal collection.) This is the first record for China; previous records are from Bhutan and Pakistan. This is also the highest altitude from which rhyssodines have been collected.

#### *Yamatosa sinensis* Bell and Bell, 1987

*Additional Locality*.—CHINA: Yunnan, Heishui—35–50 km N of Lijian, 27°13'N, 100°19'E. Five males, 15 females. Coll. E. Jendak and O. Sausa (NMW). Previously known only from Szechuan Province.

#### *Plesioglymmius* (*Ameroglymmius*) *reichardti* Bell and Bell, 1979

*Additional Locality*.—SURINAM: Saramacca, Kabo Agric. Sta., 3–7 VIII, 1980, M. I. Russell, under bark, dead tree. The first record from Surinam. Previously known from Venezuela (near the Orinoco River) and Brazil (Rio Madeira) (BMNH).

The discovery of a new species related to the subgenus *Juxtaglymmius*, but not conforming to the original description of that subgenus, necessitates a new definition of it, as well as a new key to the subgenera.

### Subgenus *Juxtaglymmius*

*Redescription*.—Antennal segment XI longer than wide, with pointed apex (in some species the point represents a very reduced conical stylet); antennal basal setae very sparse, beginning on segments V or VII; segment I pollinose dorsally; segment II with basal pollinose band; segments III–XI without pollinosity; antennal lobes close together, either separated by one-half width of basal condyle of segment I or else in contact in midline, in form of median suture between them; clypeal setae absent;



median lobe of head small, narrow, elongate, or oval, strongly convex; medial angles of temporal lobes obtuse, narrowly separated at midline, margins oblique from medial angles to posterior angles; orbital groove, temporal setae absent; temporal lobe in form of long overhang in lateral view, separated by deep notch from suborbital tubercle; eye with posterior margin clearly anterior to middle of temporal lobe; ventral surface of head with gular shelf, extended between the two suborbital tubercles; pollinosity limited to margins of shelf; one pair of postlabial setae.

Paramedian groove limited to posterior two-thirds of pronotum, varied in form; base of elytron without tooth opposite interval I; striae shallow, finely punctured, pollinosity limited to punctures; apical impression of elytron small, limited to apices of striae I and II; apical tubercle not sinuate medially; metasternum with lateral band of very coarse punctures; punctures in midline present or absent; punctures of abdominal sterna III–V coarse, tending to form transverse line in each sternum; sternum VI with row of very coarse punctures parallel to posterior margin, with scattered punctures anterior to it; female known from only one species, with deepened lateral pits on sternum IV, and also moderately deepened on sternum V. Male with ventral tooth on anterior femur.

#### KEY TO SUBGENERA

1. Head with prominent suborbital tubercle on each side; in ventral view, these tubercles apparently prominent lateral angles on shelf extended across base of mentum; in lateral view, eye extended far posterior to middle of temporal lobe . . . . . 2
- 1'. Head without suborbital tubercle; eye anterior to middle of temporal lobe . . . *Ameroglymmius*
- 2(1). Antennal lobes either contiguous in midline, or else narrowly separated by less than half width of median lobe; base of elytral interval not in form of tooth; temporal lobe in lateral view with strong overhang posteriorly . . . . . *Juxttaglymmius*
- 2'. Antennal lobes in dorsal view separated by at least width of median lobe; base of elytral interval I in form of tooth; temporal lobe in lateral view not in form of overhang . . . . . *Plesioglymmius sensu stricto*

#### KEY TO SPECIES OF *JUXTAGLYMMIUS*

1. Antennal lobes slightly separated, not extended to midline; basal impressions of pronotum preceded by row of coarse punctures . . . . . *Plesioglymmius negara*, n. sp.
- 1'. Antennal lobes in contact at midline; basal impressions of pronotum preceded by linear groove . . . . . *Plesioglymmius jugatus* Bell and Bell

#### *Plesioglymmius (Juxttaglymmius) negara*, new species (Fig. 2A–D)

*Type Specimen*.—Holotype male, labelled “MALAYSIA:PAHANG, Taman Negara N.P., 12–14, 7, 1993, leg. H. Forster” (NMW).

*Etymology*.—The specific epithet is derived from the name of the type locality.

*Diagnosis*.—The separation of the antennal lobes and the coarse punctures forming the anterior end of the paramedian groove are diagnostic.

*Description*.—Length 4.9 mm. Antennal segments VII–X with basal setae; antennal lobes separated from one another by about half width of basal condyle of antenna (Fig. 2A); head (Fig. 2B) with median lobe elongate, narrow, nearly parallel-sided; medial angle of temporal lobe obtuse, margin posterior to it slightly emarginate; temporal lobe very finely punctate; orbital groove absent (Fig. 2C); temporal setae absent.

Pronotum (Fig. 2B) relatively elongate, L/GW 1.50, widest at middle; sides only slightly curved; median groove fine, linear except for anterior and posterior median pits; each paramedian groove represented by deep basal impression preceded by five or six coarse punctures in a line, ended anteriorly at anterior third of pronotum; marginal groove linear, fine; prosternum impunctate in midline, punctate laterally; pronotum sparsely punctate.

Elytron elongate; striae shallow, coarsely punctate, pollinosity limited to punctures; one seta in apical pit at apex of stria II; one seta at posterior end of stria IV; about nine setae in apex of stria VII. Metasternum impunctate in midline, with coarse lateral punctures. Abdominal sterna (Fig. 2D) with transverse row of punctures; sternum II with a shorter, more irregular row; sterna IV and V with

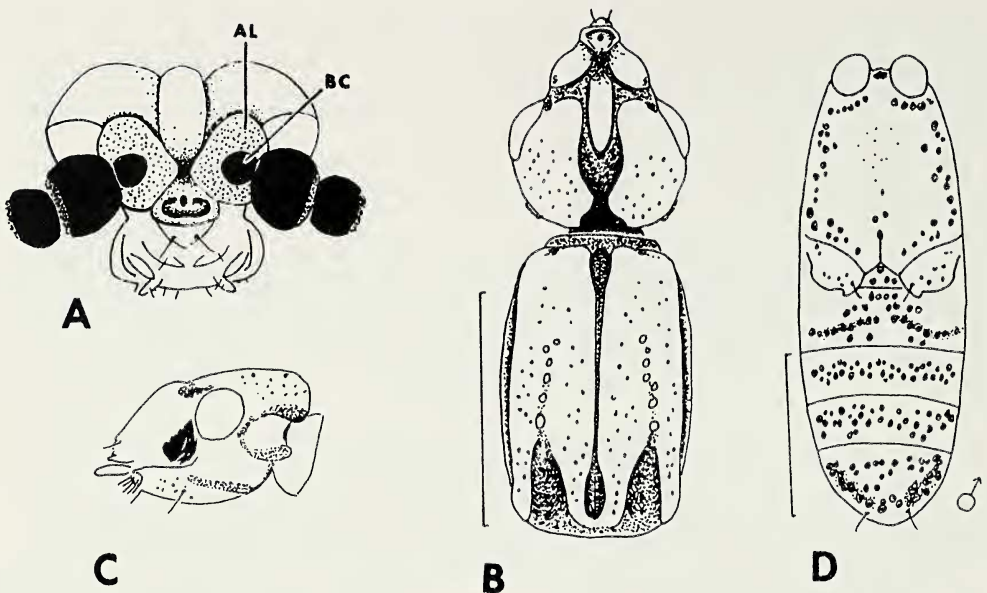


Fig. 2.—*Plesioglymmius (Juxtglymmius) negara*, n. sp. A. Head, anterior aspect; AL, antennal lobe; BC, basal condyle. B. Head, pronotum, dorsal aspect. C. Head, left lateral aspect. D. Metasternum, abdomen, ventral aspect; male.

scattered punctures; sternum VI with coarse row parallel to posterior margin, with scattered punctures anterior to it; lateral pits very shallow in male; female unknown. Male with small ventral tooth on anterior femur; calcar of hind tibia with acute angle, raised well above tibial apex (more strongly so than in *P. jugatus*).

*Distribution*.—Known only from the type locality.

*Arrowina anguliceps* (Arrow, 1901)

*Additional Locality*.—INDIA: Tamil Nadu, Ootacamund Pykara, 11 km from Mysore. A. Riedel (Hendrich coll.). Previously known only from the Cardamum Mountains, further south.

*Omoglymmius (Orthoglymmius) coomani* (Arrow, 1942)

*Additional Localities*.—CHINA: Yunnan, 14–21 VI, 1993. 100 km W. Baoshan, Gaoligongshan Nat. Res. coll. E. Jendak and O. Sausa (NMW). THAILAND: (Northwest), 19°18'N, 97°59'E, Hae Hong Son, 1600–2000 m, Ban Huai Po. 9–16, 1991. S. L. Dembicky (NMW). This species was previously known only from Vietnam.

*Omoglymmius (sensu stricto) sakuraii* (Nakane, 1978)

*Additional Locality*.—TAIWAN: Taichung (same data as for *Y. niponensis* above). The type locality is Amami-O-Shima in the Ryukyus. The species has also been recorded from southern Japan (Kagoshima Prefecture, Kyushu Island) and Vietnam. The precoxal carina and other characters vary in this species, and we provisionally treat it as one variable species. The Taiwan specimens were in a very large (50 m) spruce (*Picea morrisonicola* Hayata) log (CMNH).

*Omoglymmius* (sensu stricto) *semperi* Bell and Bell, 1982

*Additional Locality*.—PHILIPPINES: Luzon, Laguna, Mt. Makiling, 3000 ft, 26 April, 1931, F. C. Hadden coll. (CAS). This is the first definite locality for the species.

*Omoglymmius* (sensu stricto) *hiekei* Bell and Bell, 1982

*Additional Locality*.—MALAYSIA: Sabah 60 km E of Kota Kinabalu, Crocker Mtns., Gunung Emas, 16–27 IV, coll. I. Janis (NMW). This puts the species on the island of Borneo. Previous records are from Luzon, Philippines.

*Omoglymmius* (sensu stricto) *bucculatus* (Arrow, 1901)

*Additional Locality*.—INDONESIA: Lombok: Sapit-Sembalun Bumbang, 14–16 Feb 1994. Bolm leg., 900–1500 m (SMNS). This is the first record of a rhyssodine from Lombok. This species has previously been recorded only from Sumbawa.

*Omoglymmius* (sensu stricto) *patens* Bell and Bell, 1982

*Additional Locality*.—IRIAN JAYA: Manokwari, Ransiki, Mayuby, ca. 300 m, A. Riedel (Hendrich coll.). The known range of this species is on the north side of New Guinea, from Maffin Bay in the east to the east side of the Vogelkop Peninsula.

*Omoglymmius* (*Omoglymmius*) *pulvinatus* (Grouvelle, 1903)  
(Fig. 3A–C)

*Description of Female*.—7.2 mm, labeled “W. Neuguinea/Pariai, Nabire Strass v. Nabire nach Ilasa, km 50, unter Rinde 29.9.90, leg. M. Balke, L. Hendrich” (collection of L. Hendrich, Berlin); head and pronotum (Fig. 3A and B) similar to male, anterior trochanter rounded, abdominal sterna (Fig. 3C) with lateral pit of sternum IV deep, but not much wider than that of male.

*Range Extension*.—IRIAN JAYA: Testega, Manokwari Province, 1100–1300 m elevation. A. Riedel (Riedel coll.); Nabire (Hendrich coll.). This species is perhaps confined to the Vogelkop Peninsula and south coast of Geelvink Bay.

*Omoglymmius* (*Omoglymmius*) *emdomani*, **new species**  
(Fig. 4A–C)

*Type Specimens*.—Holotype female, labelled “Irian Jaya, Jayawijaya Prov. leg. A. Riedel 1993, Emdoman 900–1200 m., 29-IX-1993” (CMNH). The locality is in the mountainous interior of New Guinea, at about 4°S, 140°E. Paratype: female, mounted on same card as holotype. The holotype is the larger and darker specimen.

*Etymology*.—The specific epithet is derived from the name of the type locality.

*Diagnosis*.—An *Omoglymmius* sensu stricto with suborbital tubercles, the only such species with the antennal lobe entirely pollinose and with the median lobe shallowly emarginate posteriorly.

*Description*.—Length 6.5–8.2 mm. Antennal segments I–X punctate, XI impunctate; head (Fig. 4A) with length and width subequal; median lobe impunctate, truncate, slightly emarginate at apex, tip pollinose; frontal space broader than long; temporal lobe with anteriomedial margins slightly curved,



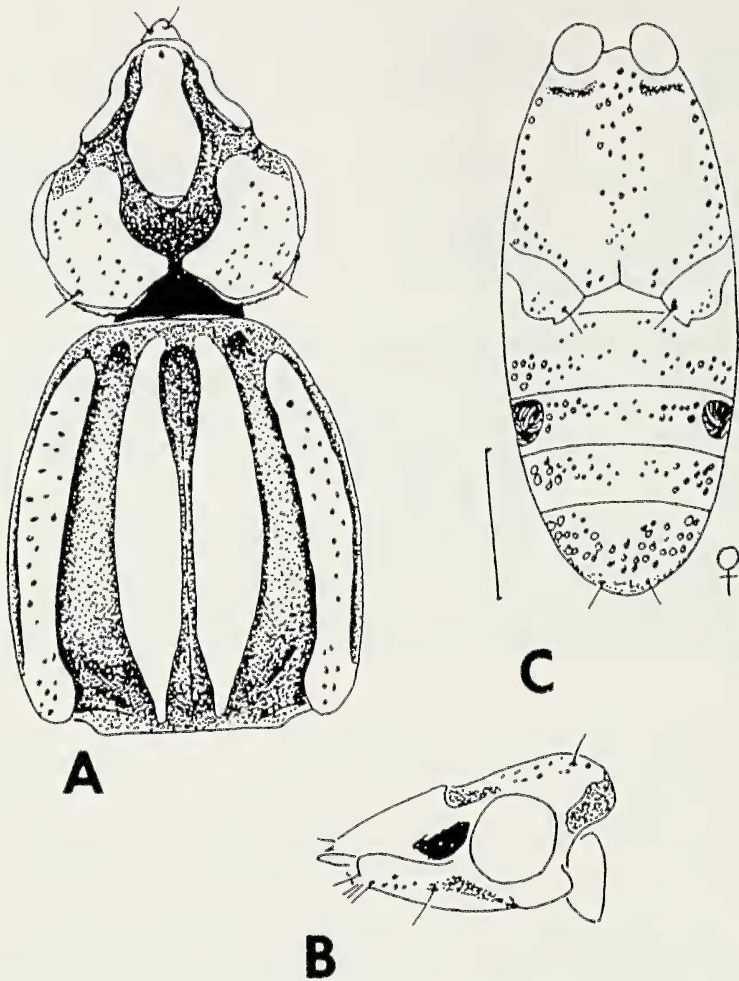


Fig. 3.—*Omoglymmius* (sensu stricto) *pulvinatus*, (Grouvelle). A. Head, pronotum, dorsal aspect. B. Head, left lateral aspect. C. Metasternum, abdomen, ventral aspect; female.

medial angles narrowly separated, slightly lobate; posteriomedial margins concave to posteriomedial angle, posterior margin transverse, temporal lobes margined posteriorly with pollinosity; medial slope of antennal lobes entirely pollinose, as are broad antennal grooves; orbital grooves broad, extended posteriorly nearly to posterior margin of eye; temporal lobe impunctate; temporal seta absent; eye large, round, prominent; suborbital tubercle rather large, about one-third as long as eye (Fig. 4B).

Pronotum (Fig. 4A) only moderately elongate,  $L/GW$  1.17; pronotum almost quadrate but narrowed to anterior angles; lateral margins nearly straight; outer carina about three-fifths as wide as inner one at middle; medial margin of outer carina sinuate near base; marginal groove dilated, anterior half punctate; pronotal carinae impunctate; prosternum microsculptured in anterior half; precoxal carinae absent.

Elytra with striae shallowly impressed, intervals flat; strial punctures coarse, sparse; base of stria IV with pollinose scarp; transverse basal scarp pollinose from stria II–IV; stria IV with one seta at apex; subapical striole with one seta; stria VII with several setae near apex. Metasternum (Fig. 4C) with single row of punctures along each lateral margin, but without median row. Abdominal sterna III–V with coarse punctures in form of transverse row widely interrupted in midline; sternum VI with

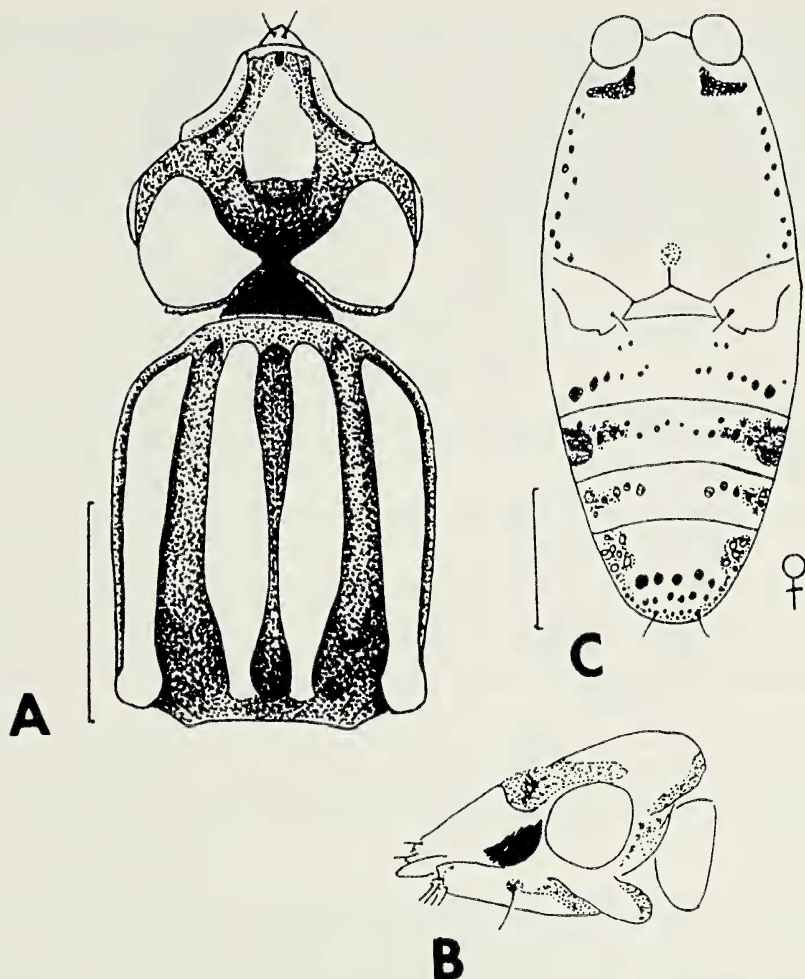


Fig. 4.—*Omoglymmius* (sensu stricto) *emdomani*, n. sp. A. Head, pronotum, dorsal aspect. B. Head, left lateral aspect. C. Metasternum, abdomen, ventral aspect; female.

scattered, very coarse punctures on posterior two-thirds; female with small but deep lateral pit on each side of sternum IV, without tooth on anterior femur; male unknown.

*Distribution.*—Known only from the type locality.

*Remarks.*—In the revised key to *Omoglymmius* sensu stricto, this species traces to couplet 74 (Bell and Bell, 1993). The latter couplet should be altered as follows:

- |            |  |                                  |
|------------|--|----------------------------------|
| 74(73).    | Marginal groove of pronotum not dilated  | 75                               |
| 74'.       | Marginal groove of pronotum dilated  | 74.1                             |
| 74.1(74'). | Inner carinae of pronotum impunctate but outer carinae coarsely punctate; one temporal seta present; pronotal margins curved | <i>O. pulvinatus</i> (Grouvelle) |
| 74.1'.     | Both carinae impunctate; temporal seta absent; pronotal margins nearly straight  | <i>O. emdomani</i> , n. sp.      |

*Omoglymmius* (sensu stricto) *sedlaceki* Bell and Bell, 1982

*Additional Locality.*—IRIAN JAYA: Manokwari Province, Anggi, Gunung Dis-behey, 29.8.1991, 2000–2150 m, leg. A. Riedel (SMNS). Previous records of this

species are from the highlands of northeastern New Guinea, and this is the first record from the western half of the island. The unity of this species is still in doubt. We found what appeared to be five distinct local forms in northeastern New Guinea which we designated by letters. The Anggi specimen is similar to our form E, from Sepalakambang, on the Huon Peninsula, from which it might differ only in having the median lobe of the head even narrower and more pointed. The status of these local forms remains in doubt, and they should be reexamined when more specimens are available.

#### Subtribe Clinidiina

### *Rhyzodiastes (Temoana) riedeli*, new species (Fig. 5A and B)

*Type Specimen*.—Holotype male, labelled "Irian Jaya: Baliem Dist., Ilugwa, Melanggama, Pass-Valley, 2100–2300 m., leg. A. Riedel, 9–10, IX, 1990" (Hendrich Colln.) (MNHB).

*Etymology*.—The specific epithet honors the collector, Alexander Riedel of Friedberg, Germany, who has sent us many interesting rhyzodids from his collecting expeditions to Irian Jaya, New Guinea.

*Diagnosis*.—A species of *Rhyzodiastes (Temoana)* with antennal tufts beginning on segment V; marginal stria reduced to a row of punctures except near humerus and apex; sutural stria two-thirds length of elytra, pronotum rather short and subquadrate, and elytra without setae except near apex of marginal stria.

*Description*.—Length 7.0 mm. Tufts of minor setae on antennal segments V–X; basal setae of antennal segments absent; segments I–V with apical pollinose bands; apical stylet small, acute; head (Fig. 5A) about as long as wide; median lobe broad, triangular, its margins straight, apex slightly acute, opposite anterior third of eye; antennal lobe pollinose except for narrow lateral margin; temporal lobes widely separated from one another; orbital groove almost absent, represented only by very short narrow pollinose area opposite anterior end of eye; eye very narrow; temporal lobe with one seta in pollinose depression.

Pronotum (Fig. 5A) rather short, L/GW 1.21; subquadrate, sides only slightly curved, widest near middle, median groove deep, moderately narrow (but wider than in *R. raffrayi*), anterior pit slightly widened; median groove impressed beyond posterior pit to pronotal base; paramedian grooves with medial margins indistinct, lateral margins abrupt; outer carina broad, its width about half that of distance from paramedian groove to midline; outer carina of even width, truncate anteriorly and posteriorly; pronotal setae absent; marginal groove limited to posterior fourth of pronotum, visible only in lateral view.

Elytra only moderately elongate (shorter than in *R. raffrayi*), scarcely narrowed anteriorly; sutural stria impressed, impunctate, its apical third effaced; parasutural stria deep, entire, impunctate; intratubercular stria deep, entire, impunctate; marginal stria impressed only near humerus and apex, otherwise represented by widely spaced punctures; apical, subapical tubercles inflated, former extended to suture; elytra without setae except for four or five in apex of marginal stria. Metasternum not sulcate, its surface microsculptured, with bluish sheen. Abdominal sterna (Fig. 5B) with sterna III–VI with deep, pollinose transverse sulci broadly interrupted at midline; sternum VI with submarginal groove pollinose, joined at anterior ends to transverse sulci; lateral end of sulcus on sternum IV in form of a slightly enlarged pit in male; male with ventral surface of anterior femur with many small tubercles, with anterior trochanter acutely pointed ventrally; tibial spurs of middle and hind legs equal; calcars nearly triangular, but abruptly truncate apically; trochanter of middle leg with dorsal situation. Female unknown.

*Distribution*.—Known only from the type locality.

*Remarks*.—This species is closest to *R. raffrayi* (Grouvelle) and keys to that species in Bell and Bell (1985:12), except for the lack of setae in the parasutural stria. The two species are separated by the lack of most elytral setae in *R. riedeli*, and the quite different shapes of the pronota of the two species.



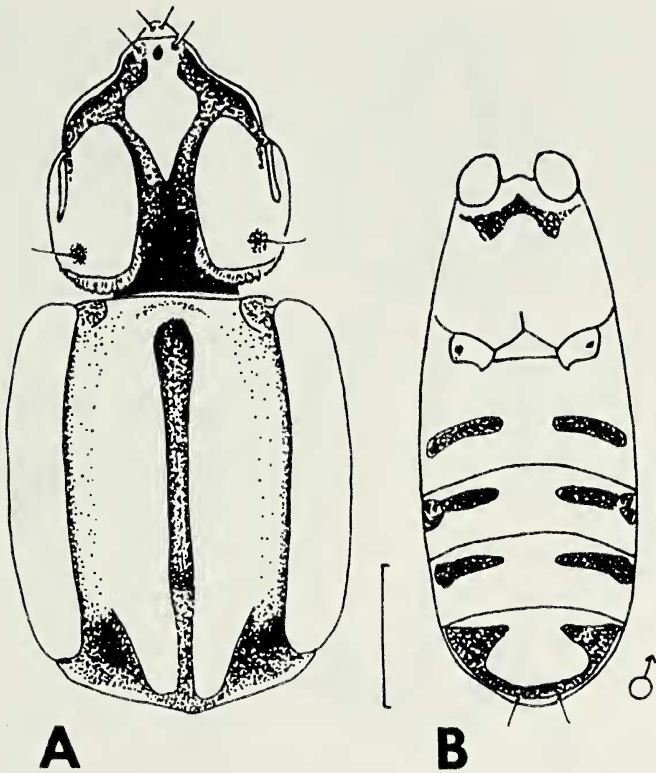


Fig. 5.—*Rhyzodiastes (Temoana) riedeli*, n. sp. A. Head, pronotum, dorsal aspect. B. Metasternum, abdomen, ventral aspect; male.

*Rhyzodiastes riedeli* is the second species of the genus found in New Guinea. It is a high-altitude species, while *R. guineensis* (Grouvelle) is a lowland species. *Rhyzodiastes guineensis* differs conspicuously in having a long, oval pronotum with a linear median groove, a complete orbital groove, the sutural stria completely lacking, and the tibiae incrassate. The two species do not appear to be closely related. The type locality of *R. riedeli* is high in the main central mountain range of New Guinea.

The key to the subgenus (Bell and Bell, 1985:12) should be altered as follows:

- 6(3'). Orbital grooves very much abbreviated or absent; temporal setae one or none . . . . . 7
- 6'. Orbital groove complete at least to posterior margin of eye; temporal setae one or two . . . . . 9
- 7(6). Lateral margins of pronotum nearly straight; outer carinae as far apart at apex of pronotum as at base; one temporal seta . . . . . *Rhyzodiastes (Temoana) riedeli*, n. sp.
- 7'. Lateral margins of pronotum clearly convergent anteriorly; outer carinae much closer together anteriorly than posteriorly; temporal seta absent . . . . . 7.1
- 7.1(7'). Orbital groove present, abbreviated opposite middle of eye; one temporal seta . . . . . *R. mishmicum* (Arrow)
- 7.1'. Orbital groove absent . . . . . 8

***Rhyzodiastes (Temoana) mindoro*, new species**  
(Fig. 6A and B)

*Type Specimen*.—Holotype female, labeled "Philippinen-Mindoro, 28 km. S. Calapan 1992, Balete 100–700 m. (19) leg. Jäch 27–29.11." (NMW).

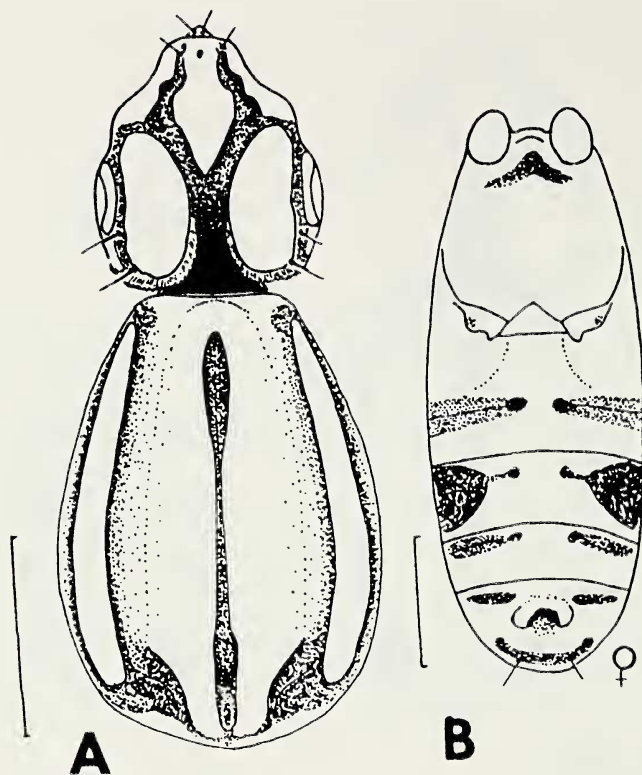


Fig. 6.—*Rhyzodiastes (Temoana) mindoro*, n. sp. A. Head, pronotum, dorsal aspect. B. Metasternum, abdomen, ventral aspect; female.

*Etymology*.—This specific epithet is derived from the name of the native island of the species.

*Diagnosis*.—A *Rhyzodiastes (Temoana)* with the characters of the *singularis* group (marginal stria entire, orbital groove complete, temporal setae present), with sutural stria impressed, and with two temporal setae, both in the pollinosity of the orbital groove. It differs from *R. (T.) bipunctatus*, since the latter species has the second temporal seta arising from a pit in the temporal lobe, well away from the margin. It resembles *R. rimoganensis* in having tubercles on sternum VI but differs from it by the presence of two temporal setae and by the linear median pronotal groove.

*Description*.—Length 7.5 mm. Antennal stylet short, conical; antennal segments short subcylindrical; tufts of minor setae on segments V–X; segments I and II partly pollinose, remaining segments glabrous; head (Fig. 6A) slightly longer than wide; median lobe short, triangular; antennal lobe glabrous, shining, well separated from median lobe; frontal grooves rather narrow pollinose; temporal lobe about twice as long as wide; medial margins curved evenly; orbital groove complete, with two temporal setae, anterior one at posterior end of eye, posterior near posteriolateral angle of head; eye crescentic, about three-fourths length of temporal lobe; posterior face of temporal lobe pilose.

Pronotum (Fig. 6A) elongate, L/GW 1.46, widest at posterior fourth, strongly narrowed anteriorly, rounded and narrowed posteriorly; median groove narrow in middle, dilated and tapered into anterior and posterior pits; paramedian groove with medial margin gradually sloped into disc, but lateral margin abrupt, pollinose scarp; medial margin of outer carina evenly curved; outer carina tapered, attenuate anteriorly, slightly narrowed posteriorly, rounded at base; marginal groove entire, visible in dorsal view; submarginal groove absent; pronotal setae absent; sternopleural groove absent.

Elytra moderately elongate, cauda absent; base of elytron deeply concave medial to base of parasutural stria, concavity densely pilose except narrow strip along suture; large scutellar pits opened into this depression; sutural interval nearly flat; sutural stria fine, impressed, finely punctate, apex outcurved, nearly extended to parasutural stria; second interval depressed; parasutural stria in form of medially facing scarp; intratubercular stria deep, entire; marginal deep, entire; submarginal impressed, ended opposite base of sternum VI; parasutural stria with one seta each near base and apex; marginal stria with four setae near apex; apical tubercle without setae. Metasternum not sulcate. Abdominal sterna (Fig. 6B) with transverse sulci of sterna III–VI broadly interrupted at midline, sulci pollinose, with distinct circular pit at medial ends; sternum IV with very large lateral pits (much larger than in *R. (T.) rimoganensis*); sternum VI with submarginal groove dilated, well separated from transverse grooves; posterior half of sternum VI impressed, bounded anteriorly by pair of tubercles; tibial spurs of middle and hind legs equal.

*Distribution.*—Known only from Mindoro Island in the Philippines.

*Remarks.*—The discovery of a member of this subgenus from the Philippines is not unexpected, as it has been found in all surrounding island groups. Other species probably await discovery in the Philippines.

To accommodate *R. mindoro*, and to make a better separation of *R. convergens*, the key to the subgenus (Bell and Bell, 1985:12) should be altered as follows:

- |           |  |                                     |
|-----------|--|-------------------------------------|
| 11(9').   | Metasternum with median sulcus; temporal lobe with one seta in orbital groove and one discal seta          | <i>R. bipunctatus</i> Bell and Bell |
| 11'.      | Metasternum without median groove; temporal lobe without discal seta but with one or two in orbital groove | 12                                  |
| 12(11').  | Portion of median groove of pronotum between pits linear; orbital groove with two setae                    | <i>R. mindoro</i> , n. sp.          |
| 12'.      | Median groove not as narrow; orbital groove with one seta  | 13                                  |
| 13(12').  | Outer carinae of pronotum strongly tapered anteriorly  | 13.1                                |
| 13'.      | Outer carinae not tapered anteriorly   | <i>R. mirabilis</i>                 |
| 13.1(13). | Median groove of pronotum narrow, although not linear, about one-tenth of width of pronotum                | <i>R. convergens</i> Bell and Bell  |
| 13.1'.    | Median groove broad  | 14                                  |

*Rhizodiastes (Temoana) convergens* Bell and Bell, 1985

*Additional Locality.*—PAPUA NEW GUINEA: Manus I., 18-II, 1981, Bowar, 23 km W. of Lorengau, 230 m, rainforest fragment, 21, coll. W. L. Brown (CUIC). The species was previously known from New Britain, in the Bismarck Archipelago. This locality is in the Admiralty Islands, nearly 400 km distant, across deep waters. Although we are not naming the Manus specimen, we have some doubts about its identity with the New Britain species. The marginal groove of the pronotum is finer and fades out completely before the apex. The orbital groove is much finer and disappears opposite the posterior margin of the eye. In most of the type series of *convergens*, this groove is complete. In one paratype, however, it is as short as in the Manus specimen, although it is as broad as in the other New Britain specimens. The Manus specimen has a complete row of setae in the parasutural stria. We did not list such setae in the *convergens* description; however, on close examination, two of the types have a few setae in such a series, and they may have broken off in other specimens. There is no trace of the sinuation at the posteriomedial angle of the temporal lobe, but this is very reduced in some of the type series of *convergens*. We need a series of specimens from Manus before deciding whether its population merits a name. Whether the two populations are separate species or only incipient subspecies, they give the impression of being closely related populations just beginning to develop morphological differences after being isolated after a dispersal event. The key can be altered so as to separate



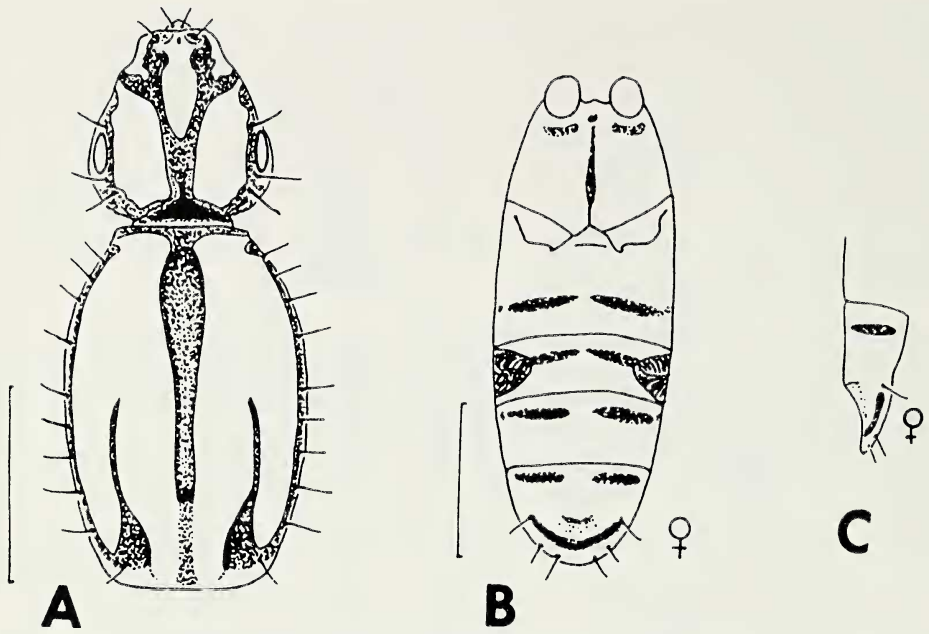


Fig. 7.—*Clinidium* (sensu stricto) *howdenorum*, Bell and Bell. A. Head, pronotum, dorsal aspect. B. Metasternum, abdomen, ventral aspect; female. C. Sternum VI, abdomen, left lateral aspect; female.

convergens (both populations) from related species. (See above under *Rhyzodias-tes mindoro*.)

*Clinidium* (*Arctoclinidium*) *rosenbergi* Bell, 1970

*Additional Locality*.—ARKANSAS: Cross County, Village Street State Park, 29 VI, 1987, coll. Kovarik, one male, two females (TAMU). A new state record.

*Clinidium* (*Clinidium*) *insigne* Grouvelle, 1903

*Additional Locality*.—This species has previously been known only from the type locality, Cali, Colombia. Through the collecting efforts of Onore and associates, it is now revealed to occur in the northern half of the Andean part of Ecuador, south at least to Bolivar Province. Ecuadorean localities are Pichincha Province: Chiriboga, Est. Forestal "La Favorita," many specimens, several collectors; Palmeros, 26-VI-87, leg. Bustamente; Santo Domingo, 23-V-86, coll. P. Vega. Cotopaxi Province: Calupiña, VII-87, coll. Onore; Sigchos, VII-87, coll. Onore. Bolivar Province: Totoras, XII-87, coll. P. Mendoza (all specimens CMNH).

*Clinidium* (*Clinidium*) *howdenorum* Bell and Bell, 1985

(Fig. 7A–C)

*Description of Female*.—Three specimens, length 4.9–6.4 mm, labeled "Trinidad: Arima, Blanchisseuse Rd. 13.1 km n. of Arima, 29 Mar 1987, elev. 500 m. Trinidad Field Party, 1987, M. E. Carter, E. R. Hoebeke, J. K. Liebherr" (CUIC). Head and pronotum similar to male (Fig. 7A), but abdominal sterna (Fig. 7B) with transverse sulci of sterna III–VI narrowly interrupted in midline;

sternum IV with lateral pit large, deep, triangular; sternum VI (Fig. 7C) impressed posteriorly with slight transverse carina helping to define rudimentary median tubercle.

*Remarks.*—Hovorka (1997) recently described another new species of *Clinidium* (sensu stricto) from Ecuador, *Clinidium mareki*. The female of this species differs from *C. howdenorum* in having a pair of grooves on sternum VI which join together at the submarginal groove forming a characteristic V-shape.

*Clinidium (Clinidium) boroquense* Bell, 1970

*Remarks.*—The tufts of minor setae on the antenna are present on segments V–X, not VI–X as previously reported. Additional material has shown that precoxal setae are present, at least in some specimens. The antennal tufts take this species out of the Insigne group, as defined by Bell and Bell (1985). It belongs to the Guildingii group. The complete intercalary and intratubercular striae and absence of a longitudinal metasternal sulcus would put it in the Jamaicense section, but this is only doubtfully distinct from the Oberthueri section, in which the sulcus is very shallow in some species. Within the Jamaicense section, this species agrees with *C. (C.) trionyx* in the presence of precoxal setae, but the latter species has “false spurs” on the middle and hind tibiae, lacks discal striae, and has the eye modified. *Clinidium boroquense* agrees with *C. (C.) jamaicense* and related species of Jamaica and Hispaniola in having narrow, elongate eyes and well-developed discal striae, but the latter group of species lack precoxal setae and do not have the temporal lobes convergent posteriorly.

In the key in Bell and Bell (1985), *boroquense* should be removed from couplet 8, so couplet 7 leads directly to couplet 9. *Clinidium boroquense* would trace to couplet 18. At this point, those specimens with a precoxal seta would key to *C. (C.) humboldti* Bell and Bell, and those without a precoxal seta would probably trace to *C. (C.) jolyi* Bell and Bell. The key can be corrected as follows, using a new couplet 18, and renumbering the old one as 18.1.

18(15').	Temporal lobes convergent posteriorly . . . . .	<i>C. boroquense</i> Bell
18'.	Temporal lobes not convergent . . . . .	18.1
18.1(18').	Precoxal setae present . . . . .	19
18.1'.	Precoxal setae absent . . . . .	21

*Clinidium (Clinidium) spatulatum* Bell and Bell, 1985  
(Fig. 8A–C)

*Description of Male.*—Length 6.4 mm. Head, pronotum, and abdomen (Fig. 8A and B) similar to female, but anterior tibia (Fig. 8C) with proximal tooth; anterior femur with raised carina; middle tibia with small acute calcar; hind tibia with short, rather blunt calcar.

Similar to *C. validum* Grouvelle male, except that the latter lacks the femoral carina and hind tibia has acutely pointed calcar. This specimen labeled “Panama: Darien, Estacion Ambiental Cana, 07°45.32'N, 77°41.07'W, Cerro Pirre, 1450 m., 6-VI-1996, R. S. Anderson, 96-112C, cloud forest litter” (CMNO).

The eye area of this specimen is heavily pigmented and almost invisible. This was true also of the holotype. In other members of this subgenus, paler (younger?) individuals may have unpigmented, obviously functional eyes, while the darker specimens have the area pigmented even more heavily than the rest of the exoskeleton.

*Clinidium (Clinidium) oberthueri* Grouvelle, 1903

*Remarks.*—The type locality of this species was simply “Ecuador.” Bell and Bell (1985) listed three specimens from Papallacta, Napo-Pastaza Province. The

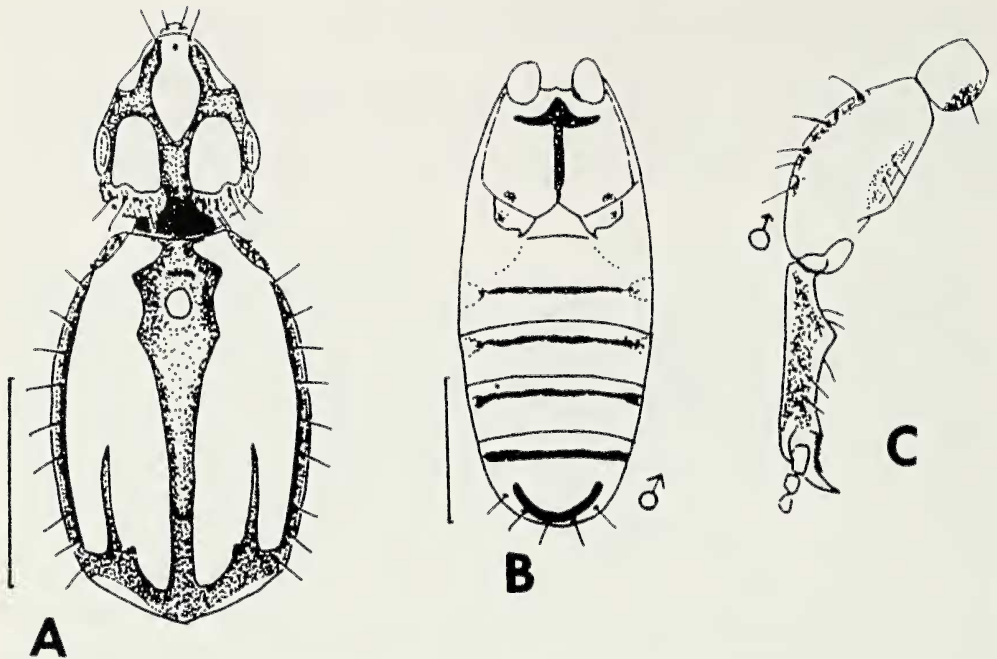


Fig. 8.—*Clinidium* (sensu stricto) *spatulatum* Bell and Bell. A. Head, pronotum, dorsal aspect. B. Metasternum, abdomen, ventral aspect; male. C. Anterior leg, tibia with proximal tooth, femur with raised ventral carina; male.

additional records below indicate that the range in Ecuador is similar to that of *C. insigne*, and that the species coexist in at least two localities.

Further locality records are: Napo-Pastaza Province: Cosanga, II-89, coll. G. Onore; km 36 via La Alegria La Bonita, 2100 m. Apr. 1-86, D. Bastidas (coll. P. Moret). Pichincha Province: Ayuriqui, 12-VII-87, M. Ferro; Palmeros, 26-VI-87, leg. Bustamente, Cotopaxi Province: Calupíña, III-87, G. Onore. Tungurahua Province: Tungurahua nord, P. Moret, 10-III-85, 3400 m. (coll. P. Moret). (All specimens CMNH except those cited as P. Moret.)

*Clinidium* (*Clinidium*) *rossi* Bell, 1970

*Remarks.*—This species was previously known from the type locality, Golfito, on the Pacific coast of Costa Rica. Additional records show that it occurs near the Atlantic coast, as well as in Panama. Costa Rica: Limón Province: Valle de la Estrella, Pandora, 17–20 Feb. 1984, H. & A. Howden (CMNO). Puerto Viejo Province: Sarapiquí, VIII-4-65, Raske (CNCO). Panama: Chiriqui Province: Dst. Renacimiento, Sta. Clara, 4400–4200 ft, July 5, 1976 (TAMU).

*Clinidium* (*Clinidium*) *dormans* Bell and Bell, 1985  
(Fig. 9A and B)

*Description of Female.*—Length 5.8 mm, labeled “Panama: Chiriqui Prov., Reserva la Fortuna, Continent Divide Trail, 19–20 Apr., 1993 A. Gillogly” (TAMU). Head and pronotum (Fig. 9A) similar to male, but abdominal sterna (Fig. 9B) with lateral pit of sternum IV slightly deeper; sternum VI with five pairs of setae, two in submarginal groove, two on disc, and one in transverse sulci.



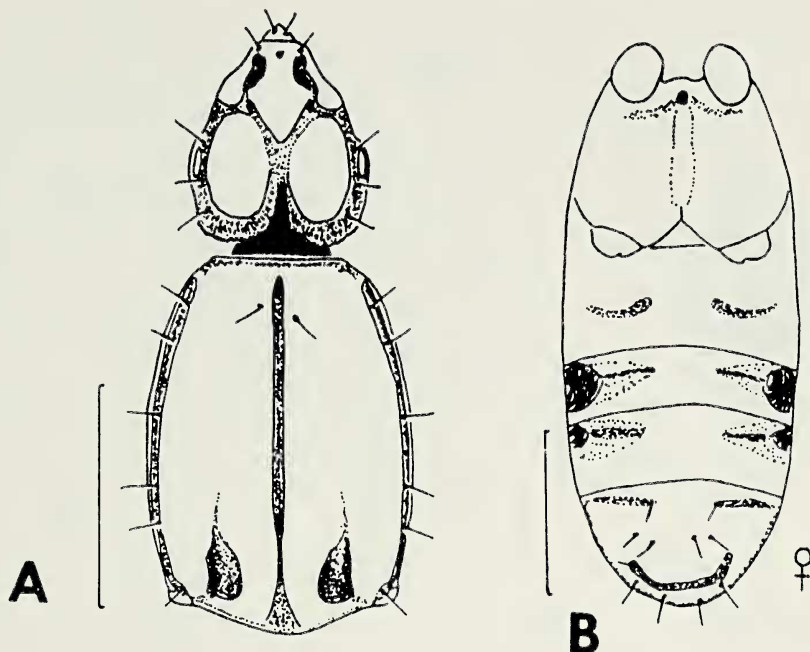


Fig. 9.—*Clinidium* (*sensu stricto*) *dormans* Bell and Bell. A. Head, pronotum, dorsal aspect. B. Metasternum, abdomen, ventral aspect; female.

*Clinidium* (*Clinidium*) *crater* Bell and Bell, 1985  
(Fig. 10A–D)

*Description of Male*.—Series of seven; lengths 5.6–6.5 mm. Six females in the same series measure 6.0–6.8 mm; labeled “Panama, Pan. Pr., km 8, El Llano-Carti Rd., VI and VII (various dates), 1994, elev. 400 m., A. R. Gillogly” (UVM). Head and pronotum (Fig. 10A) similar to female; abdominal sterna (Fig. 10B) with transverse sulci of sterna III–V shallow, all equally narrowly interrupted in midline; lateral pits of sterna III–V equal, very shallow; sternum VI with transverse sulcus represented only by pair of coarse, shallow punctures on each side; some specimens with short, thin, curved, pollinose line transversely arranged in midline, anterior part of disc separated from posterior, sloped part; anterior femur (Fig. 10C) with ventral tooth; calcar of middle leg minute; calcar of hind leg small, acutely pointed (Fig. 10D).

*Clinidium* (*sensu stricto*) *onorei*, **new species**  
(Fig. 11A and B)

*Type Specimen*.—Holotype male, labeled “Ecuador, Pichin (cha), Ayuriqui 12-VII-82. legit. M. Ferro ex copal, Hora P.M., hacienda galeria” (CMNH). Paratype: one female, same label as holotype (UVM).

*Etymology*.—The specific epithet is derived from the surname of Dr. Giovanni Onore, a Research Associate of Carnegie Museum of Natural History, whose energetic collecting and generosity with specimens has added much to our knowledge of Ecuadorian Rhysodini.

*Diagnosis*.—A *Clinidium sensu stricto* in the *rossi* section, combining a narrow median pronotal groove, a deep median metasternal groove, with a lack of setae in the sutural stria.

*Description*.—Length 5.6–6.0 mm; antennal stylet very slender, acute, about three-tenths of length

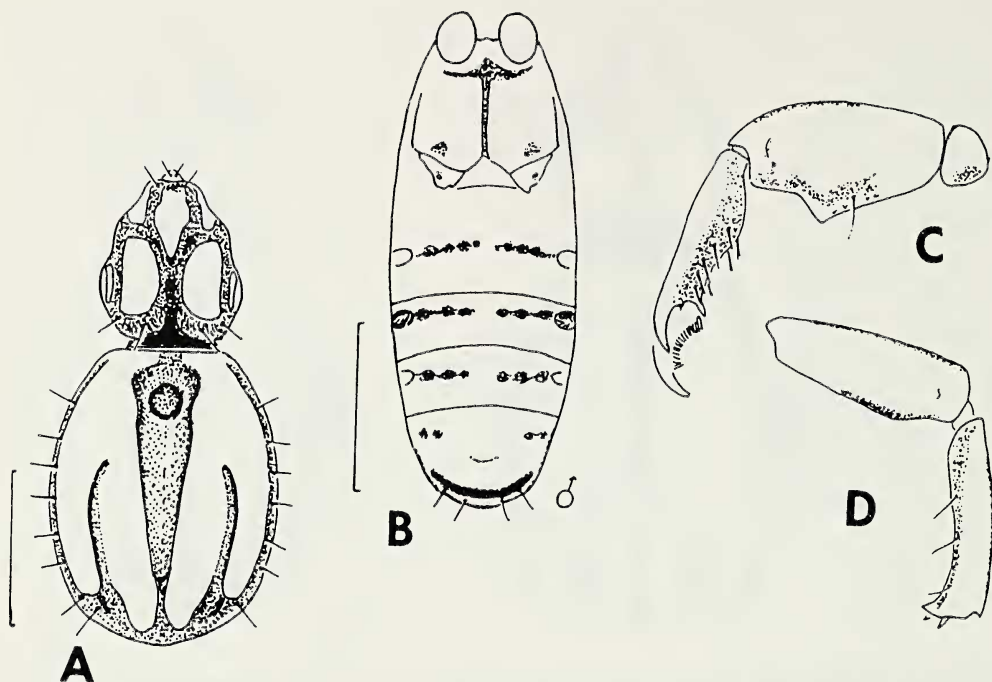


Fig. 10.—*Clinidium* (sensu stricto) *crater* Bell and Bell. A. Head, pronotum, dorsal aspect. B. Metasternum, abdomen, ventral aspect; male. C. Anterior leg, ventral tooth on femur; male. D. Hind leg, femur and tibia; male.

of antennal segment XI; tufts of minor setae on segments V–X; segments I–VII each with subapical pollinose ring; basal setae present on segments VI–XI or VII–XI. Head (Fig. 11A) slightly longer than wide; frontal grooves deep, narrow; median lobe short, triangular, its tip opposite anterior part of eye; medial margins of temporal lobes closest together posterior to tip of median lobe, divergent posteriorly; posteriomedial margins of temporal lobes very broadly bordered by pollinosity, pollinosity along lateral border of lobes also broad, irregular, curved around bases of temporal setae; four temporal setae (one anterior to eye, two opposite eye, one posterior to eye); two pairs of postlabial setae.

Pronotum (Fig. 11A) moderately elongate; L/GW 1.44, widest posterior to middle; pronotum more narrowed anteriorly than in *segne* or *oberthueri*; median groove very narrow, its margins parallel, slightly widened between median pits, extremely narrow behind posterior median pit; basal impressions oblong; discal striole linear, nearly straight, about 0.45 of length of pronotum, marginal groove narrow, visible in dorsal view, eight to nine lateral setae; one seta posterior to each basal impression, one pair of discal setae; precoxal seta present; sternopleural suture faintly suggested.

Elytra moderately elongate; sutural, parasutural, intercalary striae complete, impressed; intratubercular stria complete apically, but not impressed, apical and subapical tubercles thus not differentiated; marginal stria impressed; sutural striae without setae; parasutural stria with one seta at base; intercalary stria with complete series of about 12 setae; series of five setae near apex of intratubercular seta and continued onto apical tubercle; marginal stria with complete series of about 16 setae. Metasternum (Fig. 11B) with deep, linear median groove. Abdominal sterna (Fig. 11B) with transverse sulci of sterna III–V represented by rows of coarse punctures, widely separated at middle; sternum VI with submarginal sulcus widely separated from transverse sulci; latter short but deep; lateral pit of sternum IV moderately large, shallower in male; Sternum VI with eight setae in two transverse rows, four anterior to submarginal groove, and four posterior to it; each tibia with two equal spurs, and an apical cusp (homologous to the “false spur” in some related species); male with both mesotibial and metatibial calcaria cultrate.

*Distribution.*—Known only from the type locality.

*Remarks.*—The species is startlingly similar in general shape to the sympatric

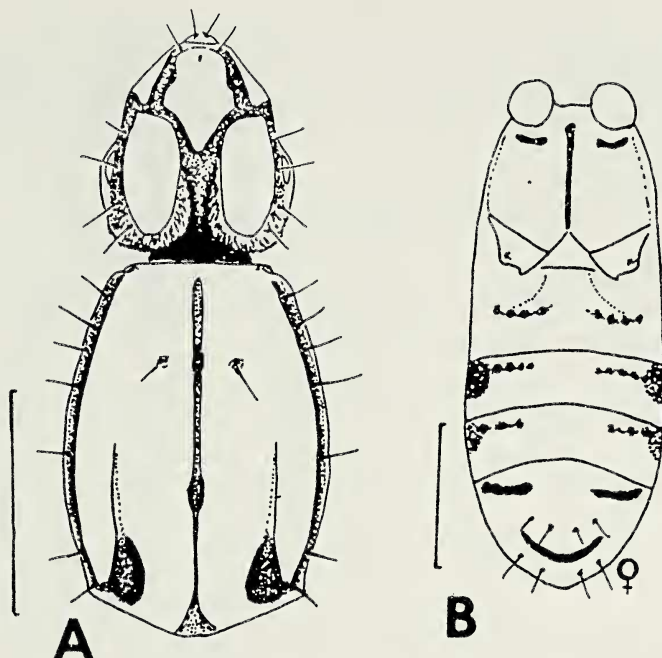


Fig. 11.—*Clinidium* (sensu stricto) *onorei*, n. sp. A. Head, pronotum, dorsal aspect. B. Metasternum, abdomen, ventral aspect; female.

*C. oberthuerei* Grouvelle. The latter is easily distinguished by the separation of the subapical and apical tubercles, and by the setae in the sutural stria.

To accommodate *C. onorei*, substitute the following for couplets 26 and 27 in the key of Bell and Bell (1985:96):

- 26(25'). Sutural stria with five setae; female with brush of dense hairs at base of hind femur ..... *C. segne* Bell and Bell  
 26'. Sutural stria without setae or with one basal seta ..... 27  
 27(26'). Frontal grooves very shallow; antennal stylet minute, about one-tenth of length of antennal segment XI; pronotum without discal setae ..... *C. dormans* Bell and Bell  
 27'. Frontal grooves deep; antennal stylet about one-third of length of antennal segment XI; pronotum with one pair of discal setae ..... 27.1  
 27.1(27'). Median groove of pronotum dilated, its greatest width subequal to about half of distance to discal striole at this point; transverse sulci of abdominal sterna III–V impressed, continuously pollinose; female with anterior margin of subapical sulcus of sternum VI angulate at midline ..... *C. kochalkai* Bell and Bell  
 27.1'. Median groove very narrow, at greatest width less than one-fifth of distance to striole; transverse sulci of abdomen formed of single rows of very coarse punctures, pollinosity limited to punctures; female with anterior margin of subapical sulcus unmodified . . .  
 ..... *C. onorei*, n. sp.

*Clinidium* (sensu stricto) *moldenkei* Bell and Bell, 1985

*Additional Locality*.—PANAMA: Chiriqui Province, 2200 m, Las Nubes, Parque Amistad, 20 Dec. 1992, A. R. and T. Gillogly (TAMU). Bocas del Toro Province, Fortuna area, N. continental divide, 750 m, Aug. 6, 1993. A. R. Gillogly (TAMU). Previously known from Oso Peninsula of Costa Rica.



*Clinidium* (sensu stricto) *sulcigaster* Bell, 1973

*Additional Locality*.—PANAMA: Chiriquí Province: 1 km. n. of Jurutungo, 20-VI-1994, el. 1900 m, A. R. Gillogly (UVM). Previously known from Guatemala. This at present is the only species known to extend through the entire length of Central America.

*Clinidium* (*Clinidium*) *gilloglyi*, new species  
(Fig. 12A–C)

*Type Specimens*.—Holotype male, labeled "Panama: Chiriquí Pr., 1 km SE Hornito 23-VII-1994, 1000 m. A. R. Gillogly" (CMNH). Paratypes: one female, one male same data as holotype (UVM).

*Etymology*.—The specific epithet is derived from the surname of the collector, Alan R. Gillogly, in appreciation of his efforts in sending us fine rhyssodine material from Panama.

*Diagnosis*.—A *Clinidium* sensu stricto with the compound eye divided into two ocelluslike organs, and with tufts of minor hairs on antennal segments VII–X.

*Description*.—Length 6.0–6.6 mm. Antennal stylet compressed, chisel-like, obliquely truncate, length about one-third of length of last antennal segment. Minor setae present on segments VII–X; basal setae absent; segments I–X each with subapical pollinose ring; head (Fig. 12A) longer than broad; median lobe small, shield-shaped; frontal grooves broad, pollinose; antennal lobe small, separated from temporal lobe by broad, pilose postantennal area; frontal space moderately broad; medial margins of temporal lobes diverging slightly posteriorly; posterior margin of temporal lobe broadly pilose; orbital groove complete; three to five temporal setae in orbital groove; compound eye divided into two ocelluslike organs (Fig. 12B); two pairs of postlabial setae.

Pronotum (Fig. 12A) elongate, L/GW 1.48; widest near middle, sides curved; apex strongly narrowed, truncate, base slightly narrowed, curved; median groove open posteriorly, strongly dilated, margins of groove straight, slightly convergent posteriorly; anterior pit only slightly wider than median groove; discal striole straight, extended to middle of pronotum; marginal groove slightly dilated, visible in dorsal view; six to eight marginal setae, none medial to basal impression (such setae present in *C. argus*); sternopleural groove intact anteriorly; posterior half formed by line of three pits.

Elytra relatively long, narrow; sutural, parasutural striae deep, narrow, conspicuously punctate; intercalary stria wider, deeper than others; intratubercular fine, entire; marginal stria entire, strongly dilated posteriorly; preapical tubercle scarcely inflated; apical tubercle inflated; sutural, parasutural striae without setae; intercalary stria with series of eight setae; intratubercular stria with three setae opposite apical tubercle; apical tubercle with three or four setae; marginal stria with nine or ten setae. Metasternum (Fig. 12C) widely, shallowly impressed in midline, but without distinct median sulcus. Abdominal sterna (Fig. 12C) with transverse sulci rather broadly interrupted in midline, interruption about half length of sulcus on either side of it; transverse sulcus of sternum VI broadly separated from submarginal sulcus; lateral pit of sternum IV moderately large in female, shallower in male; sternum VI with one pair of apical setae; male abdomen without median pollinose areas, without paired tubercles; anterior femur of male without ventral tooth, but with slight ventral ridge; lateral pit of sternum IV in female large, nearly as long as sternum, that of male small; calcaria triangular, that of hind tibia sinuate on dorsal margin.

*Distribution*.—Known only from the type locality. One other specimen is known from Veraguas Province, Panama, near Hato Chami, Cerro Colorado, 1400 m (TAMU).

*Remarks*.—The combination of divided eyes and minor setae on antennal segments VII–X has not been seen before in *Clinidium* sensu stricto, and prevents this species from keying out in Bell and Bell (1985:93–97). The minor setae send it ultimately to couplet 5, where it would match neither alternative. The eyes would send it to couplet 43, the *beccarii* group. The latter group appears to be its real kin; the head and pronotum are almost a perfect match for *C. argus* Bell and Bell. The *Clinidium* key should be altered as follows:

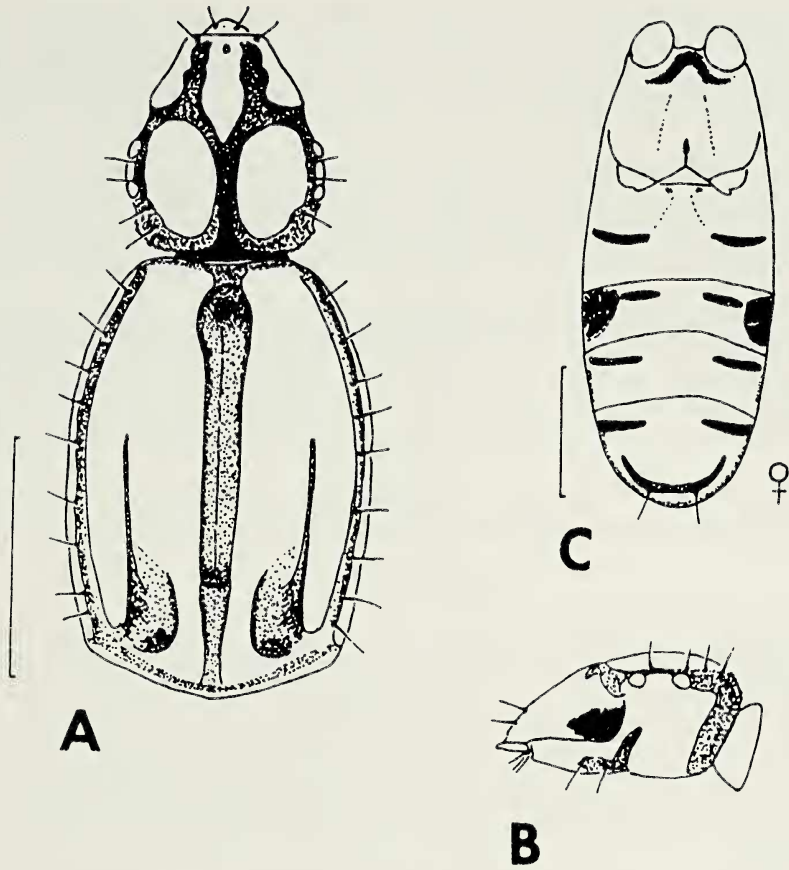


Fig. 12.—*Clinidium* (sensu stricto) *gilloglyi*, n. sp. A. Head, pronotum, dorsal aspect. B. Head, left lateral aspect. C. Metasternum, abdomen, ventral aspect; female.

- 2(1'). Eye not constricted in the middle nor divided into anterior, posterior halves; tufts of minor setae on antennae distinctly developed, on segments V–X, VI–X, or VII–X . . . . . 3
- 2'. Eye either constricted at middle of length or else divided into anterior and posterior ocelluslike parts; tufts of minor setae either very inconspicuous on segments VII–X or else absent . . . . . 43

*C. gilloglyi* will be included and the key to related species improved by substituting the following couplets in the same key:

- 43(2'). Discal striole of pronotum much closer to median groove than to lateral margin; antennal stylet very small . . . . . *C. beccarii* Grouvelle
- 43'. Discal striole either closer to lateral margin than to median groove, or else equidistant between them; antennal stylet large, obliquely truncate, chisel-like . . . . . 44
- 44(43'). Parasutural (second) stria with complete series of setae . . . . . 45
- 44'. Parasutural stria without setae . . . . . 46
- 45(44). Anterior median pit of pronotum about one-half of width of pronotum opposite it; anterior and posterior parts of eye small, close together; male with deep median sulcus on abdominal sterna I–III . . . . . *C. sulcigaster* Bell
- 45'. Anterior median pit about one-fourth of width of pronotum; eye parts larger and further apart; male with only a slight suggestion of median groove . . . . . *C. gilloglyi*, n. sp.
- 46(44'). Anterior part of sternopleural groove pollinose; median groove of pronotum as wide as

- anterior pit, sides of groove parallel; male with pollinose strip in midline of abdominal sterna I-III . . . . . *C. argus* Bell and Bell
- 46'. Anterior part of sternopleural groove glabrous, obsolete; anterior median pit much wider than median groove, latter tapered posteriorly; male abdomen without median pollinose strip . . . . . *C. moldenkei* Bell and Bell

The inclusion of *C. gilloglyi* in the *beccarii* group alters the definition of the latter. The structure of the eye and the antennal stylet remain as group characters, but the new species has antennal tufts and the male lacks tubercles on abdominal sterna III and IV, so lack of tufts and presence of tubercles are removed from the list.

The close similarity between *C. gilloglyi* and *C. argus* suggests that these two species might be sister species. This would imply that the minor setae were lost independently in *C. argus* and in the ancestor of the remaining species. The paired abdominal tubercles, well developed in the latter species, are very small in *C. argus* and absent in *C. gilloglyi*, suggestive of a secondary loss in the latter species.

The discovery of *C. gilloglyi* in Panama gives added weight to the suspicion that the type of *C. argus*, supposedly from the Philippines, is probably mislabeled.

#### ACKNOWLEDGMENTS

We thank the following museum curators for sending loans of specimens: H. Schönmann (NMW), L. Hendrich (MNHB), M. J. D. Brendell (BMNH), D. Kavanaugh (CAS), W. Schawaller (SMNS), J. Liebherr (CUIC), E. Riley (TAMU), R. Anderson (CMNO), and J. Rawlins and R. Davidson (CMNH). We thank also the following entomologists who sent specimens from their private collections: A. R. Gillogly, G. Onore, A. Riedel, and A. Smetana. We especially thank Dr. G. A. Samuelson of the Bishop Museum in Honolulu, Hawaii, for returning some paratypes of *Rhysodiastes convergeus* for comparison with the Admiralty Islands specimens. We are particularly grateful to those who allowed us to retain specimens for our collection. We also want to thank Erika Geiger (UVM) for her accurate typing of the final manuscript and Mary Morgan and Kimberly Layfield (UVM) for their work on the final revisions.

#### LITERATURE CITED

- Arrow, G. J. 1901. Remarks upon the Genus *Rhysodes*, with descriptions of some new Oriental species. *Annals and Magazine of Natural History*, 7:83-89.
- . 1942. The beetle Family Rhysodidae, with some new species and a key to those at present known. *The Proceedings of the Royal Entomological Society of London (B)*, 11:171-183.
- BELL, R. T. 1970. The Rhysodini of North America, Central America and the West Indies. *Miscellaneous Publications of the Entomological Society of America*, 6:289-324.
- . 1973. A new species of *Clinidium* from Guatemala. *Proceedings of the Entomological Society of Washington*, 75:279-282.
- . 1977. Ergebnisse der Bhutan-Expedition 1972 des Naturhistorischen Museums in Basel (Col: Rhysodidae). *Entomologica Basiliensia*, 2:151-158.
- . 1994. Beetles that cannot bite: Functional morphology of the head of adult rhysodines (Coleoptera: Carabidae or Rhysodidae). *Canadian Entomologist*, 126:667-672.
- . 1998. Where do the Rhysodini (Coleoptera) belong? Pp. 261-272, in *Museo Regionale di Scienze Naturali Torino, Phylogeny and Classification of Caraboidea*, XX International Congress of Entomology, August 1996, Florence, Italy.
- BELL, R. T., AND J. R. BELL. 1979. Rhysodini of the world. Part II, Revisions of the smaller genera (Coleoptera: Carabidae or Rhysodidae). *Quaestiones Entomologicae*, 15:377-446.
- . 1982. Rhysodini of the world. Part III, Revisions of *Omoglymmius* Ganglbauer (Coleoptera: Carabidae or Rhysodidae) and substitutions for preoccupied names. *Quaestiones Entomologicae*, 18:124-259.
- . 1985. Rhysodini of the world. Part IV, Revisions of *Rhysodiastes* Fairmaire and *Clinidium* Kirby, with new species in other genera (Coleoptera: Carabidae or Rhysodidae). *Quaestiones Entomologicae*, 21:1-172.



- . 1987. Rhysodine beetles in the Geneva collection: A new species of *Yamatosa* and a major range extension for *Omoglymmius sakuraii* Nakane (Coleoptera: Carabidae or Rhysodidae). *Revue Suisse de Zoologie*, 94:683–686.
- . 1993. Rhysodine beetles (Insecta: Coleoptera: Carabidae or Rhysodidae): New species, new data, and revised keys to *Omoglymmius* (Subgenera *Omoglymmius*) and *Pyxiglymmius*. *Annals of Carnegie Museum*, 62:165–185.
- GROUVELLE, A. 1903. Synopsis de Rhysodides et descriptions d'espèces nouvelles. *Revue d'Entomologie*, 22:85–148.
- HOVORKA, O. 1997. New *Clinidium* species from Ecuador (Coleoptera: Carabidae: Rhysodini). *Acta Societatis Zoologicae Bohemiae*, 61:19–22.
- LEWIS, G. 1888. On the Family Rhysodidae. XI. *The Annals and Magazine of Natural History*, 2:76–85.
- NAKANE, T. 1978. New or little-known Coleoptera from Japan and its adjacent regions XXIX (in English). *Reports from the Faculty of Science, Kagoshima University (Earth Sciences and Biology)*, 11:129–134.